

Customer No.: 31561  
Docket No.: 11121-US-PA  
Application No.: 10/709,637

### REMARKS

#### Present Status of the Application

The Examiner issued rejections under 35 USC 103(a) for Claims 1-4, 6, and 8 as being unpatentable over Sakamoto (US 5,734,177) in view of Yamakita et al (US 20020105613).

In addition, Claims 5 and 7 are rejected under 35 USC 103(a) as being unpatentable over Sakamoto (US 5,734,177) in view of Yamakita et al (US 20020105613) in view of Katayama (US 6,100,947).

Applicant has most respectfully considered the remarks set forth in this Office Action. Regarding the obvious rejections, it is however strongly believed that the cited references are deficient to adequately teach the claimed features as recited in the presently pending claims. The reasons that motivate the above position of the Applicant are discussed in detail hereafter, upon which reconsideration of the claims is most earnestly solicited.

#### Discussion of claim rejections under 35 USC 103(a)

*The Office Action rejected Claims 1-4, 6, and 8 under 35 U.S.C. 103(a) as being unpatentable over Sakamoto (US 5,734,177, hereinafter "Sakamoto") in view of Yamakita et al (US 20020105613, hereinafter "Yamakita").*

Applicant submit that independent claim 1 patently define over the prior references for at least the reason that the cited art fails to disclose or suggest each and every feature as claimed in the present invention.

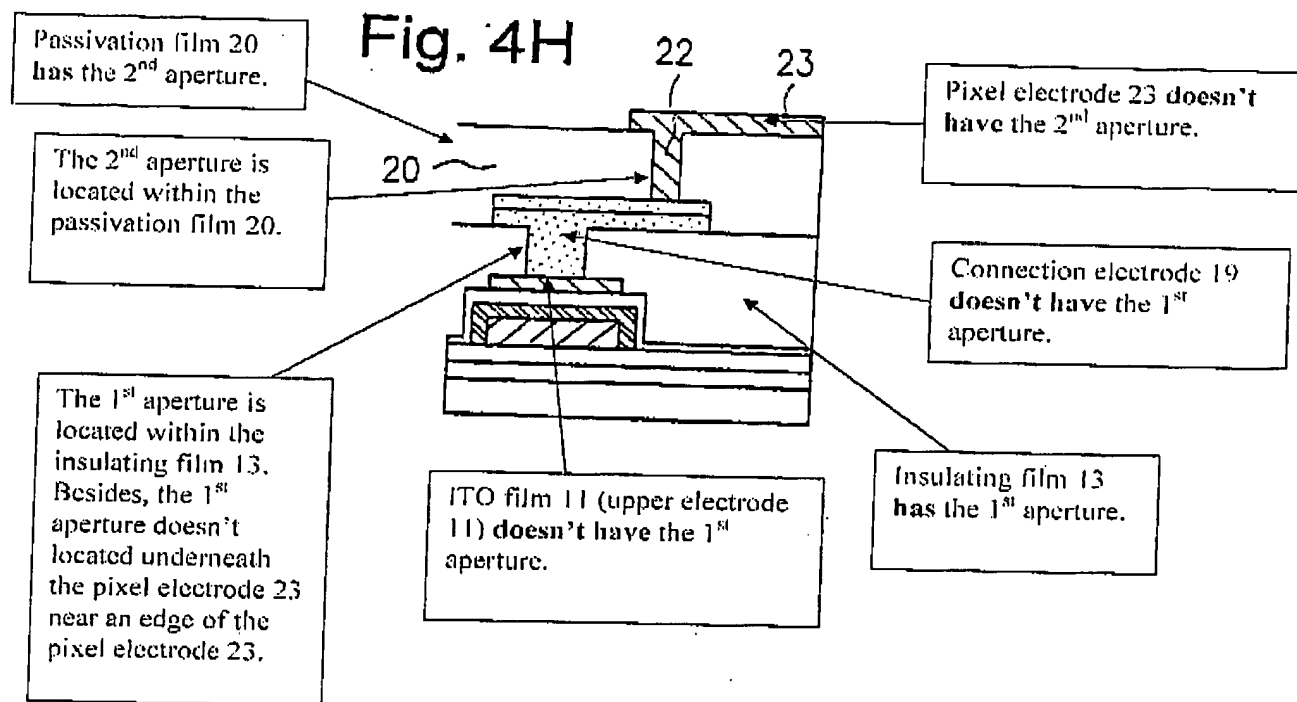
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Claim 1 teaches, among other things, *"...a plurality of storage capacitors disposed over the base plate, wherein each storage capacitor has an upper electrode having at least a first aperture which is located underneath a pixel electrode near an edge of the pixel electrode, and the direction of the electric field adjacent to the first aperture being at a predetermined angle to an alignment direction of the liquid crystal molecules, the liquid crystal layer possessing a transition from a splay state to a bend state while operating..."*. Contrary to the Office's assertion, Sakamoto does not teach or suggest the above features. Instead, Sakamoto teaches forming a contact hole 16 for a storage capacitor through the interlayer insulating film 13 (see Figures 2C, 3F, and 4F, col. 9, ln 53-59). In other words, the contact hole 16 of Sakamoto which is being construed by the Office as the first aperture (see page 6 of the Office Action) is not formed through or in the upper electrode 11.

The Office Action recited Sakamoto (US 5734177) disclosing *"...a plurality of storage capacitors (abstract) has an upper electrode 11 having at least a first aperture (the circle holes where 19 is located also shown below in response to argument) which is located underneath a pixel electrode near an edge of the pixel electrode (shown below in response to argument)..."*. Applicant respectfully disagrees with the Office Action and would like to point out what the figure actually shows. Referring to the figure and explanations as shown below in response to this Office Action, the Sakamoto discloses an upper electrode 11 without having at least a first aperture. One of the circle holes located within 19 represents one aperture located within the insulating film 13 but not located within the upper electrode 11. Sakamoto discloses a first aperture formed in the

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insulating film 13 but not formed in the upper electrode 11. Owing to the electricity, an aperture formed in an insulating film, as Sakamoto disclosed, will not have the same effect as that formed in an electrode, as claimed in claim 1, on the direction of the electric field of the liquid crystal molecules adjacent to the aperture. That is to say, Sakamoto does not disclose "an upper electrode 11 having at least a first aperture".



Yamakita teaches forming an aperture 6a in the pixel electrode 6 [0120] but not forming an aperture in an insulating film as disclosed in Sakamoto. An aperture formed in an insulating film, as Sakamoto disclosed, will not have the same effect as that formed in an electrode, as claimed in claim 1 or as Yamakita disclosed, on the direction of the electric field of the liquid crystal molecules adjacent to the aperture. That is to say, the

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direction of the electric field of the liquid crystal molecules adjacent to the aperture formed in an insulating film and that adjacent to the aperture formed in an electrode is totally different.

Therefore, it is impossible to combine an aperture formed in an insulating film, as disclosed in Sakamoto, to have the same function as an aperture formed in an electrode, as disclosed in Yamakita.

As discussed above, Sakamoto teaches forming an aperture in an insulating film, whereas Yamakita teaches forming an aperture in a pixel electrode. Therefore, the motivation to combine Sakamoto with Yamakita is lacking because the effects of having the aperture formed in different materials are different. Further, even if there were a motivation to combine Sakamoto with Yamakita, the combination still fails to render the claimed invention unpatentable for at least the reasons that neither Sakamoto nor Yamakita teaches forming an aperture in an upper electrode of a storage capacitor. Therefore, the present invention as set forth in claim 1 should not be considered as unpatentable over Sakamoto in view of Yamakita and should be allowable. Since independent claim 1 is allowable over the prior art of record, its dependent claims, 2-8 are allowable as a matter of law because these dependent claims contain all features of their respective claims 13 and 25, respectively. *In re Fine*, 83, F.2d 1071 (Fed. Cir 1988).

Regarding Claim 8, the following claim limitation: "wherein each of pixel electrodes further comprises at least a second aperture when the first aperture is located underneath the pixel electrode, and the second aperture is formed above the first aperture"

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is patentably distinguish over Sakamoto and Yamakita. According to FIGs 4H and 7H in Sakamoto, the contact hole 22 as identified as the second aperture is formed in the passivation film 20 instead in the pixel electrode. (as shown in figure above in response to office action) Therefore, neither Sakamoto nor Yamakita teaches each storage capacitor has an upper electrode having at least a first aperture and each of pixel electrodes further comprises a second electrode and the second aperture is located directly above the first aperture as shown in FIG. 3 of the present invention. As a result, Claim 8 is patentable over Sakamoto and Yamakita.

*The Office Action also rejected Claims 5, 7 under 35 U.S.C. 103(a) as being unpatentable over Sakamoto (US 5,734,177, hereinafter "Sakamoto") and Yamakita et al (US 20020105613, hereinafter "Yamakita") in view of Katayama (US 6,100,947, hereinafter "Katayama")*

Applicant respectfully disagree and would like to point out that even though the Examiner relied upon Katayama for teaching the use of a reflective electrode, still Katayama cannot cure the specific deficiencies of Sakamoto and Yamakita. Accordingly, claims 5, 7 also patently define over combination of Sakamoto, Yamakita and Katayama for at least the same reasons discussed above. Reconsideration is respectfully requested.

#### Newly Added Claims

Applicant has added claims 9-14, in which claim 9 is written in independent form teaching the feature that each storage capacitor has an upper electrode having at least a first aperture. Claims 10-14 are written in dependent form so as to further limit the

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claimed subject matter of claim 9 of the present invention. It is submitted that claims 9-14 are in condition for allowance for the above reasons.

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**CONCLUSION**

For at least the foregoing reasons, it is believed that all Claims 1-14 of the present application patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Date: *April 13, 2006*

Respectfully submitted,

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